IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.:	10/716,157	Art Unit: 2615
Applicant:	Anthony E. Faltesek, et al.	Conf. No.: 5301
Filed:	November 18, 2003	
Examiner:	P. Lee	
Docket No.:	H0005694/8634/90288/1190	
For:	AUTOMATIC AUDIO SYSTEMS FOR FIRE DETECTION AND DIAGNOSIS, AND CREW AND PERSON LOCATING DURING FIRES	

APPELLANT'S REPLY BRIEF UNDER 37 CRF §1.193

Mail Stop: Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Examiner's Answer mailed March 3, 2009 and in support of the Appellant's Appeal Brief filed December 4, 2008, the applicant requests consideration of the following:

The Examiner's Answer asserts that "appellant fails to specifically point out and compare any single claimed limitation in the claims on how Appleby operates differently from the claimed invention" (Examiner's Answer, paragraph bridging pages 5-6). However, this statement is clearly in error in that Appellant has consistently and repeatedly stated "there is no analysis of 'characteristic sounds emitted by a fire' taught or suggested by the combination of Yokoi et al. and Appleby et al." (Appellant's Brief, page 9). As such, Appellant has, in fact, pointed out and explained how Appleby operates differently than the claimed invention.

The Examiner's Answer asserts that "Both Appleby and the present claimed invention would operate the same way by analyzing audio of characteristic sounds emitted by a fire because the software analyzes the signal characteristic between 20-150 Hz (lines 7-17 and 35-39 of p. 2)" (Examiner's Answer, page 6). However, Appleby does not "analyze audio of sounds emitted by a fire." Instead, Appleby analyzes Doppler frequency shift produced by a fire. In this regard, Appleby explicitly states that "The presence of a fire 3 results in rising bubbles of warm air 4 . . . the rising bubbles can be assumed to act as moving reflectors of sound waves emitted from a stationary source . . . As a result of the well known Doppler effect, the frequency is shifted by some of the sound waves received by the transducer 6" (Appleby, page 2, lines 35-45). In this regard, "The receiving transducer 6 is connected to an amplifier 12 . . . followed by an AC coupled filter amplifier 14, having a . . . passband from approximately 20Hz to 150Hz" (Appleby, page 3, lines 15-23). As such, the analyzed signal characteristic of from 20Hz to 150Hz is merely a Doppler shift caused by moving air bubbles of warm air 4.

The Examiner's Answer asserts that "Appleby further shows the step of receiving at the control unit with respect to at least one fire signature (lines 26-31 of p.3)" (Examiner's Answer,

page 6). However, the Examiner's fire signature is merely the output of amplifier 14 which (as noted above) is clearly a Doppler shift caused by moving bubbles of warm air 4.

The Examiner's Answer asserts that "Appleby's sensor would be triggered by the fire (see abstract) because the sound characteristic within the frequency band 20-150 Hz (Fig. 3) would indicate whether there is an alarm condition" (Examiner's Answer, page 6). However, the frequency band of 20-150 Hz is not directly detected by the Appleby sensor and is merely the frequency shift of the 40 kHz ultrasound signal caused by the moving bubbles of air 4 and Doppler effect.

The Examiner's Answer asserts that "Appleby analyzes the audio of characteristic sound emitted by the fire, not the heat, nor the temperature effect. The transducer in Appleby detects sound wave, not heat or temperature. The transducer in Appleby picks all the sound in the environment. The frequency band 20-150 Hz being analyzed clearly is within the audio bandwidth" (Examiner's Answer, page 6). In may be noted, first, in this regard that there is no indication, whatsoever, that the Appleby transducer could or would pick up sounds in the 20-150 Hz frequency range. This would appear to be complete speculation on the part of the Examiner.

It may be noted next that, Appleby explicitly states that "If the frequency of emission is a practically convenient value such as 40kHz . . . The sensor therefore must be capable of resolving signals within a narrow pass band of up to ±120Hz around the emitted frequency (Appleby, page 3, lines 6-10). As such, the Appleby transducer resolves a 40 kHz signal with a Doppler frequency shift of 20-150 Hz where the 40 kHz signal has been frequency shifted by the rising bubbles of warm air 4.

The Examiner's Answer asserts that "The frequency band 20-150 Hz being analyzed clearly is within the audio bandwidth" (Examiner's Answer, page 6). However, the Appleby sensor 6 is not receiving a 20-150 Hz signal. Instead, the Appleby sensor 6 is receiving a 40 kHz signal that has been frequency shifted by 20-150 Hz. This means that the Appleby sensor 6 is resolving an audio signal with a lower frequency limit of 40 kHz minus 20-150 Hz and an upper frequency limit of 40 kHz plus 20-150 Hz. This is not the same as receiving a 20-150 Hz audio signal.

The Examiner's Answer asserts that "The frequency band 20-150 Hz being analyzed is within the audio bandwidth. Appleby explicitly shows the sound characteristics caused by a fire in Fig. 3" (Examiner's Answer, page 6). However, Appleby's FIG. 3 does not show the sound characteristics of a fire. Instead, Appleby explicitly states that "Figure 3 shows the typical output signal from the amplifier 14 resulting from a free burning fire" (Appleby, page 3, lines 26-27). The output of amplifier 14 is the Doppler frequency shift of the 40 kHz signal caused by rising air bubbles. As such, Appleby's FIG. 3 merely reflects the Doppler frequency shift of the 40 kHz ultrasound signal caused by the rising bubbles of warm air 4 heated by a fire.

The Examiner's Answer asserts that "Since appellant fails to provide any valid reason why Appleby does not teach the claimed limitation, the rejections are proper" (Examiner's Answer, page 7). However, Appellant has, in fact, provided valid reasons why Appleby does not teach the claimed limitations. The valid reason is because all of the claims are limited to the step of (and apparatus for) "analyzing . . . characteristic sounds emitted by a fire." Since Appleby merely analyzes Doppler frequency shifts caused by a fire, Appleby (and the combinations of Appleby and Yokoi et al. or Appleby and Markowitz et al.) does not teach or suggest each and every claim

limitation. Since the combination does not teach or suggest each and every claim limitation, the rejections are improper and should be overturned.

For the foregoing reasons, allowance of claims 1, 2, 6-11, 14, 16, 25 and 27-29 as now presented, is believed to be in order. It is respectfully requested that this Board reverse the decision of the Examiner in all respects.

Respectfully submitted,

HUSCH BLACKWELL SANDERS
WELSH & KATZ

By: _____
Jon P. Christensen
Registration No. 34,137

Paul M. Vargo
Registration No. 29,116

Dated: April 13, 2009

HUSCH BLACKWELL SANDERS
WELSH & KATZ
120 South Riverside Plaza, 22nd Floor
Chicago, Illinois 60606
(312) 655-1500 phone
(312) 655-1501 fax